

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF WISCONSIN

MARK SHANLEY, AMY SHANLEY, and
AMERICAN FAMILY MUTUAL INSURANCE
COMPANY,

Plaintiffs,

v.

OMEGA FLEX, INC.,

Defendant.

OPINION AND ORDER

19-cv-664-slc

This is a product liability action seeking reimbursement for the insured and uninsured losses allegedly resulting from a lightning strike and subsequent fire at the home of Mark and Amy Shanley in La Crosse, Wisconsin. Plaintiffs, American Family Mutual Insurance Company and its insureds, the Shanleys, allege that defendant Omega Flex, Inc. was negligent in its design of its TracPipe® Corrugated Stainless Steel Tubing System (“CSST”) product, and that the design of TracPipe® is defective and dangerous. (Plaintiffs also alleged negligence and strict liability in regards to the adequacy of defendant’s warnings and installation instructions, but it has withdrawn those allegations. *See* dkt. 73, at 2.) Before the court are two motions: (1) defendant’s motion for an order *in limine* precluding plaintiffs’ expert, Dr. Thomas Eagar, from offering certain opinions and testimony at trial, dkt. 37; and (2) defendant’s motion for summary judgment on various grounds, dkt. 41.¹

Because I agree with defendant that plaintiffs cannot establish causation even if Dr. Eagar’s opinion is allowed, I am granting summary judgment to defendant on that ground

¹ Defendant also moved for an order *in limine* to preclude plaintiffs’ fire investigator, Beth Anderson, P.E., from offering certain opinions concerning Omega Flex’s warnings and installation instructions. Dkts. 39, 40. However, plaintiffs have stated that they do not intend to have Anderson testify on these matters. Dkt. 70. Accordingly, the court will deny the motion as moot.

without ruling on the *Daubert* motion. To the same effect, there is no need for the court to address defendant's spoliation argument.

FACTS

On or around September 23, 2016, lightning storms surged through the La Crosse, Wisconsin area. A lightning strike caused a fire in the home of Mark and Amy Shanley, who were away on vacation. After learning that a fire had occurred in their absence, the Shanleys notified their insurer, American Family Mutual Insurance Corporation, which sent a number of investigators to the home to attempt to determine a cause and who might be liable. Plaintiffs' investigation determined that the Shanley home used TracPipe® corrugated stainless steel tubing ("CSST"), manufactured by defendant Omega Flex, to convey propane gas from the propane tank to gas appliances in the home, and that the TracPipe® CSST's design may have caused the fire losses.

American Family notified Omega Flex of its potential liability, and the parties conducted a final scene inspection at the Shanley home on November 7, 2016. During the November 7 inspection, the parties' experts found one melting hole in the TracPipe® CSST line that fed the workshop heater.

The parties also discovered that, when the home was built in 2007, the TracPipe® CSST system had not been installed in the manner directed by Omega Flex's installation instructions. Specifically, the CSST system had not been directly bonded to the household grounding electrode with a bonding clamp and heavy gauge bonding wire.

Plaintiffs retained Dr. Thomas Eagar, an MIT-trained expert in metallurgy and arc physics, to testify as an expert in this case. Dr. Eagar has submitted a report in which he offers

the following opinions “based upon a reasonable degree of engineering certainty”:

1. CSST is defective because the wall thickness of the metal is too thin to survive the vast majority of lightning strikes;
2. Black iron pipe is thicker than CSST, much more resistant to perforation by lightning, and is a feasible alternative to CSST;
3. CSST like that used in the Shanley home is a dangerous and defective product;
4. A lightning-induced arc caused the melting hole in the gas piping found in the Shanley home;
5. Propane escaping from the perforated gas line was ignited during this arcing event, resulting in a gas-fueled fire;²
6. Bonding or grounding the CSST system may be “helpful, harmful or have no effect on perforation of the CSST by lightning depending on where the lightning enters the structure;” and
7. The effectiveness of grounding as a means of protecting CSST from perforation by a lightning strike depends on a number of factors including (a) the strength of the strike; (b) where and how the lightning entered the structure; and (c) the resistance of the grounding system.

Expert Report of Dr. Thomas Eagar, dkt. 21.

Opinions Nos. 6 and 7 are drawn from papers published by Dr. Eagar and his colleagues in which they challenge the claim by CSST manufacturers that proper grounding of CSST prevents perforation by lightning. In the first, “Fire Safety of Grounded Corrugating Stainless Steel Tubing in a Structure Energized by Lightning,” Dr. Eagar and his team identified a number of parameters that affect whether lightning-induced arcing sufficient to melt a hole in the CSST

² Omega Flex’s expert, on the other hand, theorizes that the fire started when electrical current from either a direct or indirect lightning strike entered the Shanley home, causing electrical arcing within the home, and igniting lightweight combustibles. He opines that the hole in the CSST did not form until after the fire started.

wall would be reduced by grounding the CSST with a bond wire. Dkt. 71-2. According to the paper, the voltage and the current or charge transferred through the arc depend on “how strong the lightning current is, where it enters the structure and the configuration of conductors in and around the structure.” *Id.* at 9. Using 64 different combinations of parameter values broader than those used in the simulations performed by the CSST manufacturers, Dr. Eagar and his team found “several cases where grounding does not reduce voltage enough to prevent arc initiation nor reduce charge through the arc enough to prevent melting.” *Id.* at 19. However, their research did find that grounding *would* help prevent damage caused by lightning “in certain situations, such as when current enters through the gas line.” *Id.* at 20. Ultimately, the team concluded, “in some cases grounding will help prevent melting, in some cases it will not and in some cases it will increase the risk of melting.” *Id.*

In the second paper, titled “Variation in Lightning Simulations to Assess Grounding Safety of Corrugated Stainless Steel Tubing,” Dr. Eagar and Bryan Haslam ran a series of circuit simulations with different parameters to demonstrate that the small set of simulations by CSST manufacturers did not adequately account for the uncertainty of lightning and the variety of situations where it may interact with CSST. After performing “thousands of simulations” using different parameter combinations, Eagar and Haslam found that “there are cases where grounding may prevent perforation, cases where grounding may reduce the damage but not prevent perforation and cases where grounding increases the chances of perforation.” *Id.* at 3.

With respect to the Shanley fire, Dr. Eagar did not attempt to perform any electrical simulations specific to the Shanley home to determine whether directly bonding the CSST would have prevented the perforation in the gas piping. At his deposition, he explained that to do a “Shanley specific” simulation, he would have to know “the impedances, the resistances;

you'd have to know where the lightning came into the home; you'd have to know the waveform of the lightning strike.” Eagar Dep., dkt. 71-4, at 105:4-9. Without “all 20 some parameters,” he said, he could not simulate whether a direct bond on the CSST system installed in the Shanley home would have prevented the hole and subsequent fire. *Id.* at 118:5-22. As a result, Dr. Eagar cannot determine to a reasonable degree of certainty whether an additional ground would have prevented the Shanley fire.

Plaintiffs filed this action against Omega Flex and the gas pipe installer, Ziegler Heating and Refrigeration, Inc., in La Crosse County Circuit Court in January 2019. Dkt. 1-1. Ziegler, however, was not amenable to suit because it had been dissolved as a corporation on January 31, 2013 and had completed its CSST installation work no later than October 8, 2007. Dkt. 1-27. Accordingly, on July 23, 2019, the court entered an order granting summary judgment to Ziegler. Dkts. 1-34, 38. On August 13, 2019, Omega Flex removed the case to this court, asserting diversity jurisdiction. Dkt. 1.

OPINION

Plaintiffs allege causes of action against Omega Flex for both negligence and product liability. Causation is an essential element of each of plaintiffs' claims. *See* Wis. Stat. § 895.047(1)(e) (requiring plaintiff to establish that a product's “defective condition was a cause of the claimant's damages” for strict products liability claim, whether based on manufacturing defect, design defect, or failure to warn or instruct); *Rockweit by Donohue v. Senecal*, 197 Wis. 2d 409, 418, 541 N.W.2d 742, 747 (1995) (requiring “causal connection between the conduct and the injury” for plaintiff to maintain cause of action for negligence). The parties agree that the question of what caused the fire at the Shanley residence is a matter outside the common

knowledge and everyday experience of a lay juror; therefore, plaintiffs cannot establish causation without the support of expert testimony. *See Gopalratnam v. Hewlett-Packard Co.*, No. 13-cv-618-pp, 2017 WL 1067768, *3 (E.D. Wis. Mar. 21, 2017) (expert testimony required to prove claim that defective cell in battery pack in laptop caused a fire); *Kreyer v. Farmers Co-op. Lumber Co.*, 18 Wis. 2d 67, 77, 117 N.W.2d 646, 651 (1962) (“The subject of the electrical wiring in the barn and its role in connection with the fire is one which was beyond the common knowledge of the jury[.]”). Plaintiffs have proffered Dr. Eagar as their sole expert witness on causation.

In Wisconsin, causation exists where the defendant’s negligence was a “substantial factor” in producing the plaintiff’s harm. *Fischer by Fischer v. Ganju*, 168 Wis. 2d 834, 857, 485 N.W.2d 10, 19 (1992) (citing *Merco Distrib. Corp. v. Commercial Police Alarm Co., Inc.*, 84 Wis.2d 455, 458, 267 N.W.2d 652 (1978)). “Substantial factor ‘denotes that the defendant's conduct has such an effect in producing the harm as to lead the trier of fact, as a reasonable person, to regard it as a cause, using that word in the popular sense.’” *Id.* (quoting *Clark v. Leisure Vehicles, Inc.*, 96 Wis.2d 607, 617–18, 292 N.W.2d 630 (1980)). A plaintiff has the burden to produce evidence from which a jury could reasonably find a causal nexus between the negligent act and the resulting injury. *Id.*

Importantly, “negligence and causation are separate inquiries and . . . a finding of cause will not automatically flow from a finding of negligence.” *Fondell v. Lucky Stores, Inc.*, 85 Wis. 2d 220, 226–27, 270 N.W.2d 205, 209–10 (1978). Moreover, “[a] mere possibility of . . . causation is not enough; and when the matter remains one of pure speculation or conjecture or the probabilities are at best evenly balanced, it becomes the duty of the court to direct a verdict

for the defendant.” *Merco*, 84 Wis. 2d at 460, 267 N.W.2d at 655 (quoting Prosser, Law of Torts 241 (4th ed. 1971)).

Defendant argues that plaintiffs’ claims must be dismissed because plaintiffs cannot prove that the fire would have occurred at the Shanleys’ house even if the installer had properly bonded the CSST system as directed. Indeed, plaintiffs *admit* that “whether an additional ground would have prevented the Shanley fire cannot be determined to a reasonable degree of certainty because after a fire there are too many unknown factors.” Response Br., dkt. 73, at 5. Instead, they point to the thousands of simulations run by Dr. Eagar and his team which they say demonstrated, through rigorous testing, that the addition of grounding would not prevent fires, with any reasonable degree of certainty, when CSST is assaulted by lightning. According to plaintiffs, “[t]he key issue . . . is whether Omega Flex, **even if it is grounded**, makes TracPipe reasonably safe,” and it is up to the jury to decide this question. Br. in Opp. to Mot. in Limine, dkt. 71, at 15-16 (emphasis in original).

Plaintiffs’ argument misses the mark. This is not a product recall petition; it is a civil suit for damages. To recover from Omega Flex, it is not enough for plaintiffs merely to show that properly bonding the CSST, as Omega Flex requires, does not make TracPipe® safe because it does not eliminate all foreseeable risk of lightning-induced damage to homes across the country. Plaintiffs *also* must show that, if the CSST had been properly bonded *in the Shanley home*, then lightning-induced arcing still would have caused a perforation and the resulting fire. As Dr. Eagar readily admitted, however, he did not even attempt to set up a simulation or to replicate any conditions in the Shanley home to attempt to discern whether the CSST still would have perforated had the system been properly bonded because, in his opinion, there were simply too many unknown parameters for any reliable conclusions to be drawn.

This is a fatal gap in plaintiffs’ proof. Notably, plaintiffs do not point to any simulations or studies performed by Dr. Eagar in which he attempted to quantify the likelihood that grounding would prevent arcing and perforation; as his simulations showed, bonding’s efficacy depended largely on the strength of the strike and its manner of entry into the home, both of which are unknowns in this case. Dr. Eagar has deemed the product “unsafe” even when grounded because his simulations showed that grounding does not work in *all* or even a majority of scenarios that could occur in nature.

Critically, however, Dr. Eagar’s studies also found that bonding *is* effective in *some* scenarios. This being so, how could a jury determine whether the Shanley fire still would have occurred even if the installer had properly bonded it? It could not. In the absence of any evidence accurately replicating the conditions at the Shanley home, and in the absence of any *other* credible evidence to support a finding that proper bonding would not have prevented the fire, the jury would be left to speculate whether the alleged defect in the TracPipe® – its thin wall – was a substantial factor in causing the fire.

“[O]n a motion for summary judgment, it is the plaintiff’s burden to prove his claim, not the defendant’s burden to disprove it.” *Milligan by Thomas v. Rock on the River, Inc.*, No. 16-CV-498-JDP, 2017 WL 6734190, at *5 (W.D. Wis. Dec. 29, 2017) (citing *Sterk v. Redbox Automated Retail, LLC*, 770 F.3d 618, 627 (7th Cir. 2014)). Put another way, when the trier of fact has no credible evidence upon which to base a reasoned choice between liability and nonliability, the defendant is entitled to judgment in its favor. *Merco*, 84 Wis. 2d at 460, 267 N.W.2d at 655. Such is the case here.

ORDER

IT IS ORDERED that the motion of defendant Omega Flex, Inc. for summary judgment, dkt. 41, is GRANTED. Its motions in limine, dkts. 37, 39, are DENIED as moot. The clerk of court is directed to enter judgment for defendant and close this case.

Entered this 1st day of March, 2021.

BY THE COURT:

/s/

STEPHEN L. CROCKER
Magistrate Judge